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#93/04

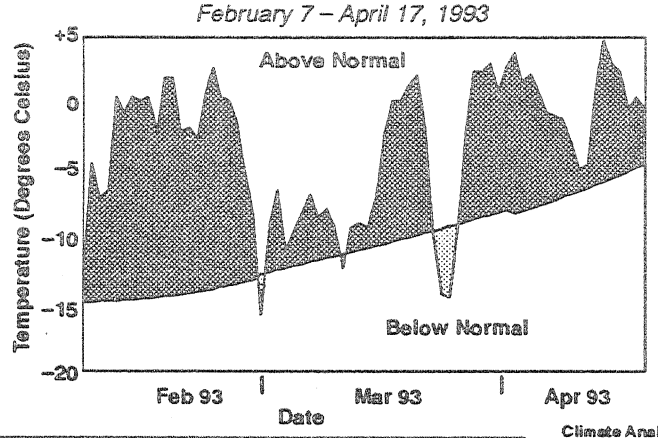
CLIMATE ANALYSIS CENTER

CONTAINS:
MARCH 1993
GLOBAL
CLIMATE
ANOMALIES

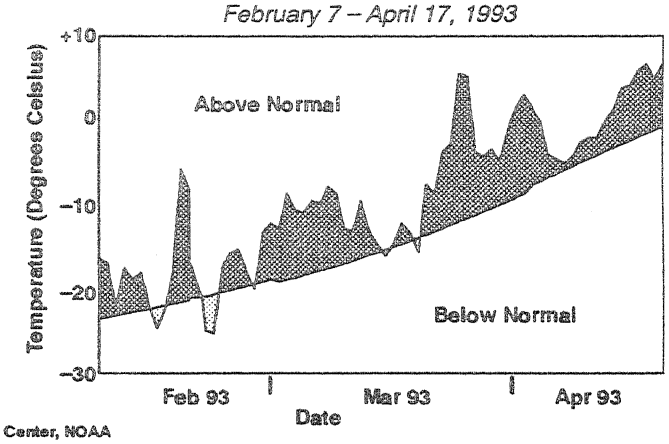
WEEKLY CLIMATE BULLETIN

No. 93/16 Washington, DC April 21, 1993

DAILY MEAN TEMPERATURE
Bethel, Alaska
February 7 – April 17, 1993



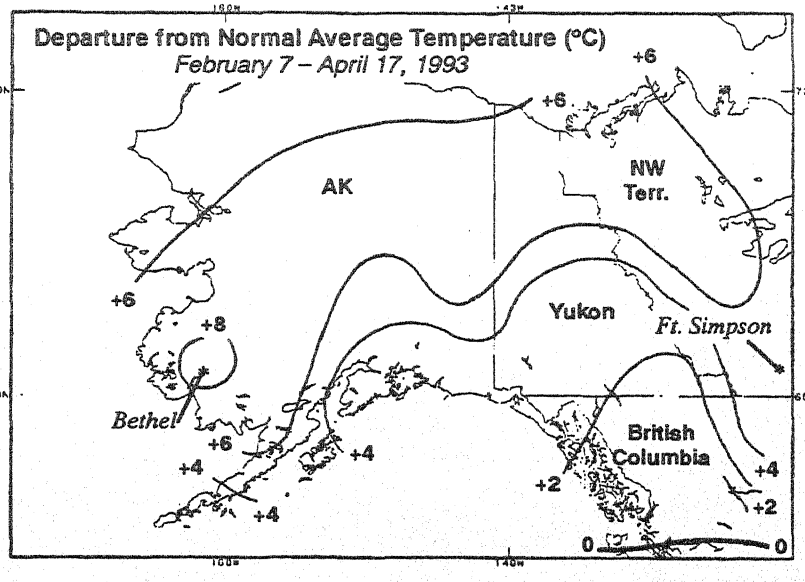
DAILY MEAN TEMPERATURE
Fort Simpson, Canada
February 7 – April 17, 1993



Climate Analysis Center, NOAA

VERY MILD WEATHER DOMINATES ALASKA AND NORTHWESTERN CANADA. *A prolonged spell of very mild weather covered most of Alaska and northwestern Canada since early February. Readings averaged up to 8°C above normal in southwestern Canada, with departures above +6°C common across a large swath of the northwestern Northwest Territories, the northern Yukon, and northeastern, central, and southwestern Alaska. During the 70–day period, only 3 days at Bethel, AK (above left) and 5 days at Ft. Simpson, Canada (above right) averaged cooler than normal. Highs soared up to 15°C near Fairbanks, AK and to 16°C in the west–central Yukon, with only the immediate Arctic Coast remaining below freezing throughout the period.*

Departure from Normal Average Temperature (°C)
February 7 – April 17, 1993



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE–NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER

WEEKLY CLIMATE BULLETIN

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This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief, concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

Highlights of major global climatic events and anomalies.
U.S. climatic conditions for the previous week.
U.S. apparent temperatures (summer) or wind chill (winter).
Global two-week temperature anomalies.
Global four-week precipitation anomalies.
Global monthly temperature and precipitation anomalies.
Global three-month precipitation anomalies (once a month).
Global twelve-month precipitation anomalies (every 3 months).
Global temperature anomalies for winter and summer seasons.
Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Center via the Global Telecommunication System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

To receive copies of the Bulletin or change mailing address, write to:

Climate Analysis Center, W/NMC53
Attention: Weekly Climate Bulletin
NOAA, National Weather Service
Washington, DC 20233
Phone: (301)-763-8071

GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF APRIL 17, 1993

1. Hawaii:

STILL VERY DRY.

Less than 20 mm of rain fell on the Islands as six–week moisture deficits ranged from 70 to 290 mm [10 weeks].

2. East–Central United States:

UNUSUALLY WET CONDITIONS DEVELOP.

Above normal precipitation fell for the tenth consecutive week, allowing significant moisture surpluses to develop. Last week's heaviest rains fell from central Pennsylvania southward to north–central North Carolina, where 50 to 95 mm were reported. According to press reports, the rain combined with snow melt to cause locally severe river flooding. Precipitation surpluses since early March reached 150 mm at some locations [10 weeks].

3. Ecuador and Northern Peru:

DRIER WEATHER BRINGS RELIEF.

Although a few showers dumped up to 90 mm of precipitation on isolated locations, most of Ecuador and Peru received less than 10 mm, ending the recent wet spell [Ended at 5 weeks].

4. Eastern Brazil:

VERY LOW RAINFALL TOTALS REPORTED AGAIN.

Precipitation totals were below 30 mm across most of the region as six–week moisture deficits climbed to 300 mm. A few locations received as much as 50 mm from isolated showers [9 weeks].

5. Central South America:

RAINS END PROLONGED DRYNESS.

Heavy rains (50 to 150 mm) brought relief to most of Uruguay and east–central Argentina; however, little or no precipitation was reported across west–central Argentina [Ended at 5 weeks].

6. Northern Europe:

PROLONGED DRY SPELL FINALLY ABATES.

Little or no precipitation fell in northern Scandinavia, but another 20 to 40 mm of rain dampened central and northern continental Europe. Farther south and east, 50 to 90 mm of rain soaked the Alps, northern Italy, Croatia, and Slovenia [Ended at 20 weeks].

7. South–Central Europe and Northeastern Africa:

TEMPERATURES MODERATE.

Significantly above normal temperatures abruptly ended the cold spell across most of the region [Ended at 19 weeks].

8. Southern Africa:

MORE DRY WEATHER.

Rainfall totals were again below 20 mm across the region as unseasonably dry conditions persisted. Six–week precipitation shortfalls of 50 to 180 mm were common in southern Mozambique and northeastern South Africa [7 weeks].

9. Pakistan and Northwestern India:

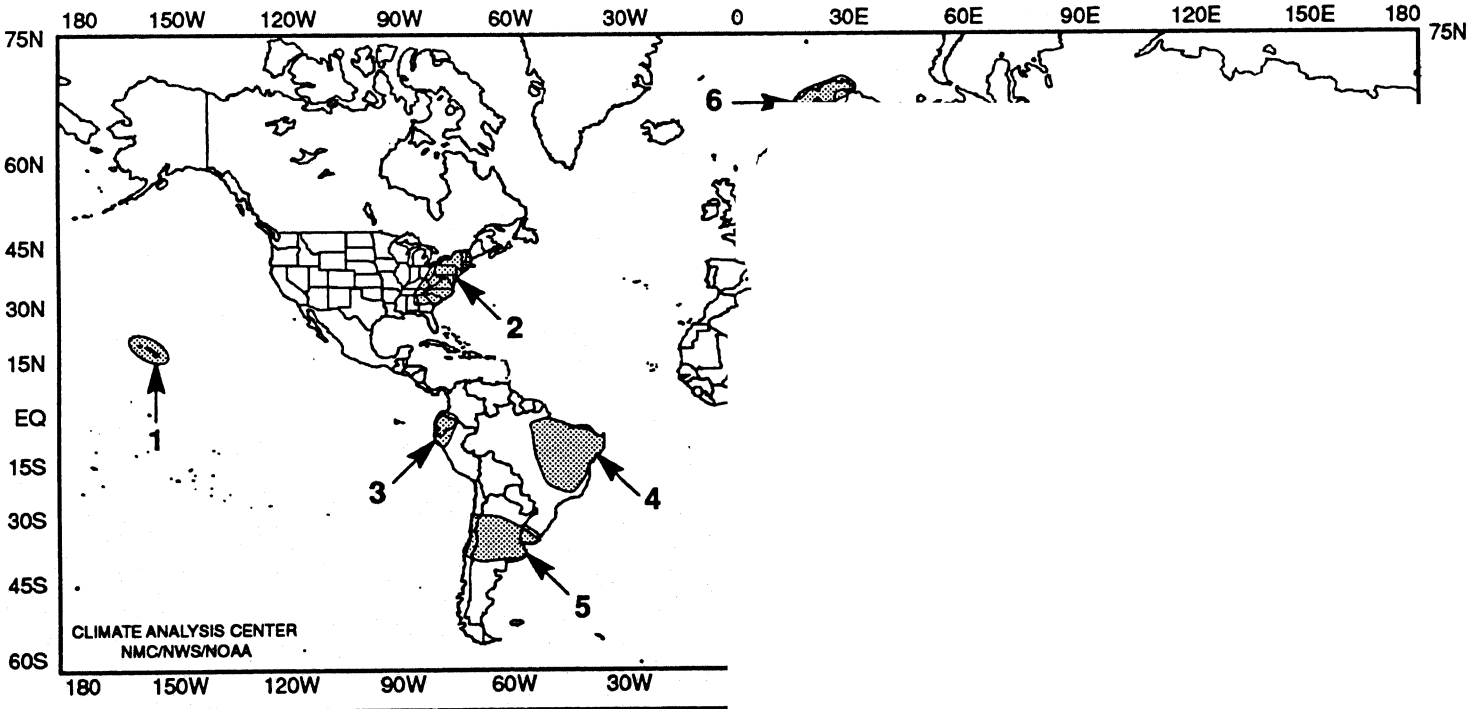
COLD SPELL ENDS.

Temperatures returned to normal across most of the region [Ended at 5 weeks].

10. Northeastern Australia:

VERY DRY CONDITIONS PREVAIL.

Showers brought 30 to 80 mm of rain to the immediate coast, but little or no precipitation was reported at inland locations. Six–week moisture deficits reached 400 mm in some areas [10 weeks].



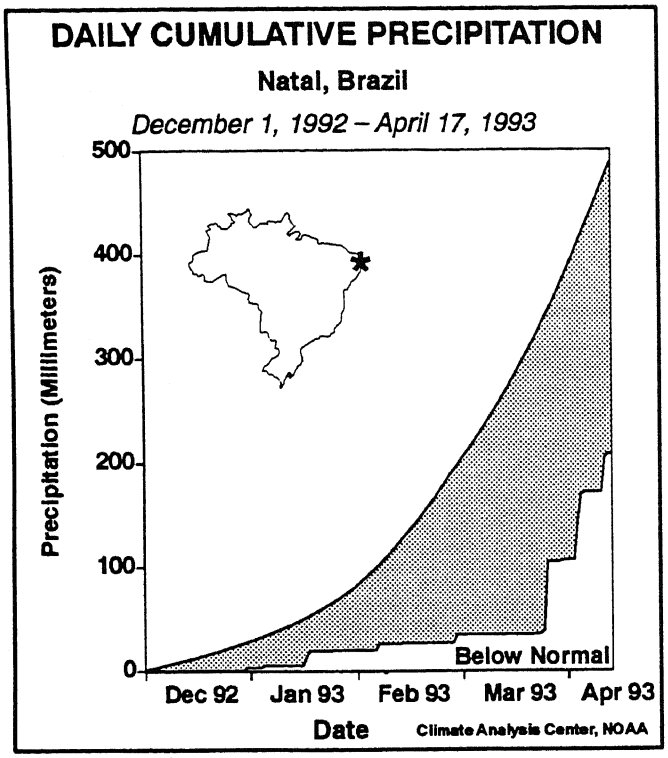
EXPL

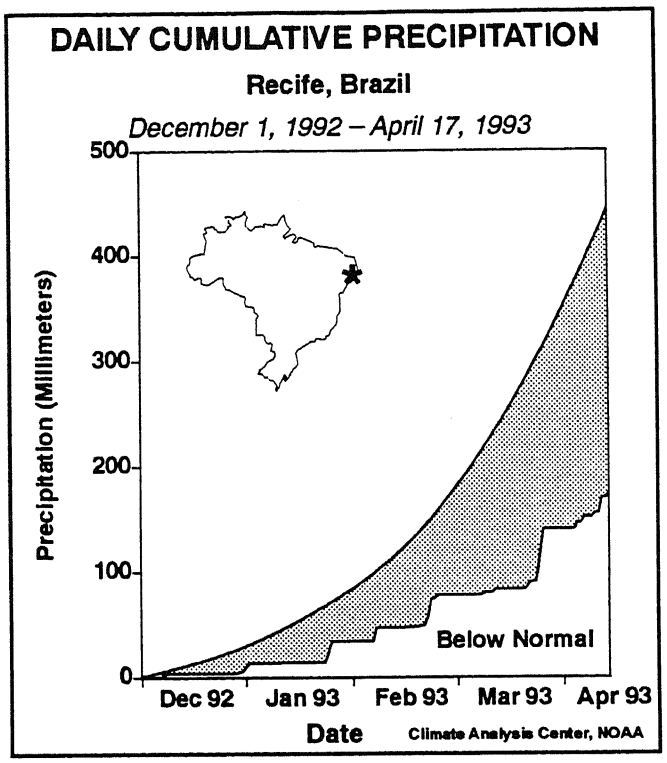
TEXT: Approximate duration of anomalies is in brackets. Precipitati

MAP: Approximate locations of major anomalies and episodic eve temperature anomalies, four week precipitation anomalies, lc

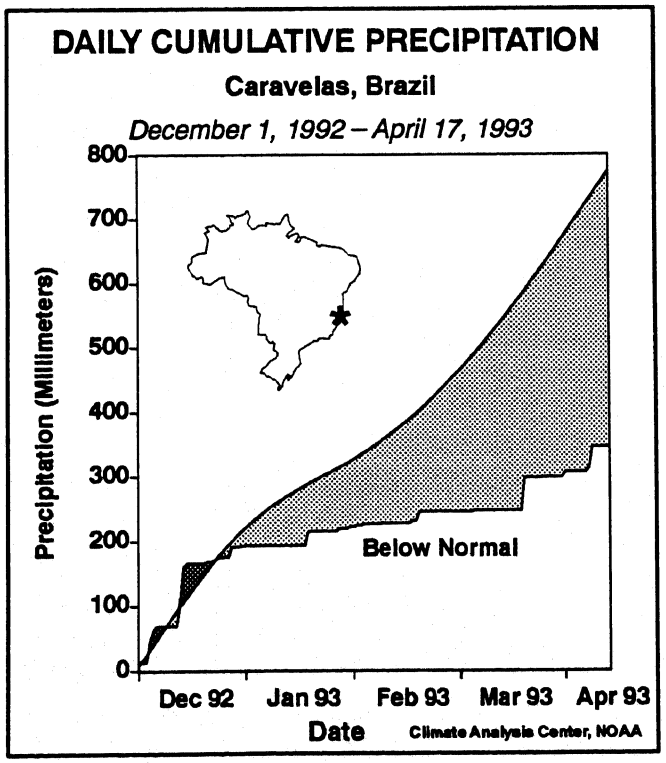
GLOBAL CLIMATE HIGHLIGHTS FEATURE

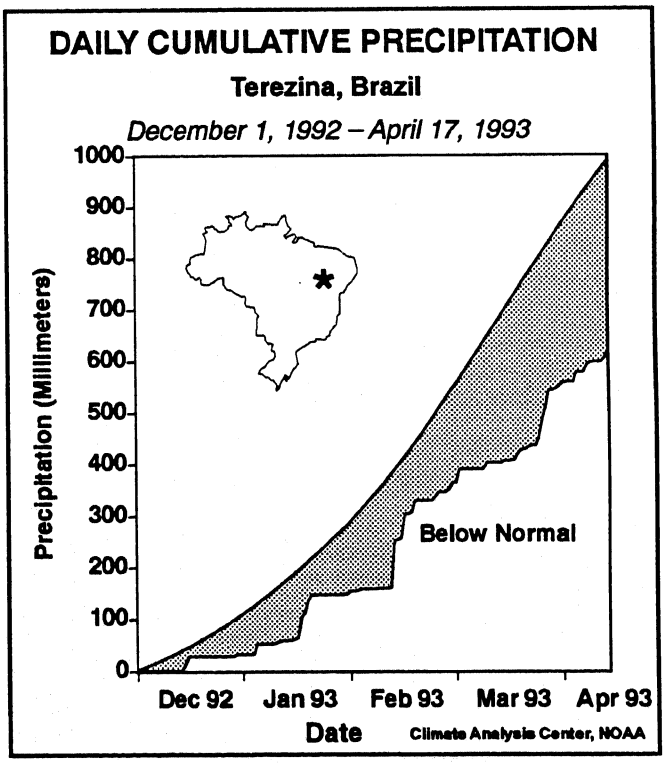
PROLONGED DRYNESS IN NORTHEASTERN BRAZIL





Abnormally dry weather prevailed across eastern Brazil since the beginning of December 1992. Along the coast, Natal (top left), Recife (top right), and Caravelas (bottom left) measured precipitation totals of 208 mm, 174 mm, and 345 mm, respectively, which is less than 45% of normal for the 138–day period. Farther inland, Terezina (bottom right) recorded 618 mm of rain, 62% of normal. According to press reports, the dryness has affected the region's cocoa and cotton crops, and severely impacted subsistence farming.





UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF APRIL 11 – 17, 1993

Early in the week, powerful thunderstorms pelted the east–central Plains and middle Mississippi Valley with locally heavy rains, strong wind gusts, and golf–ball–sized hail. Up to four inches of rain saturated portions of western Missouri, sending rivers out of their banks and causing minor flooding. At mid–week, the storm system moved southward and eastward. Intense thunderstorms raked Oklahoma and northern Texas while heavy rains soaked the lower and middle Mississippi and lower Ohio Valleys. Strong thunderstorm winds over eastern Texas tore shingles off roofs and downed trees and power lines. During the last part of the week, the large system edged eastward to the Atlantic coast, scattering severe thunderstorms across the Southeast, spreading rains of one to three and a half inches that swelled streams and rivers in the mid–Atlantic, and aggravating severe flooding in the Northeast. In upstate New York, 150 homes on the southern shore of Lake Oneida, 300 along the nearby Seneca River, and 110 in Port Byron were flooded, according to press reports. Six deaths (so far), were attributed to the flooding in central New York.

The week commenced with a sluggish low pressure system off Cape Cod bringing moderate to heavy rain to the Northeast. The rain combined with snow melt and ice jams to cause widespread flooding along rivers from western New York to Maine, forcing the closure of a number of roads. A second low–pressure system dumped up to nine inches of snow across the upper Midwest while a third system brought more snow into the northern Rockies. On Monday and Tuesday, violent thunderstorms erupted across eastern Kansas, Missouri, and central Illinois, with high wind gusts downing power lines and locally heavy rain causing flash floods. Meanwhile, a spring snowstorm brought up to a foot and a half of snow to Wyoming, Colorado, South Dakota, and Nebraska while light rain fell along the northern Pacific coast.

At mid–week, powerful thunderstorms spawned severe weather across the southern Plains and lower Mississippi Valley, with tornadoes causing damage in eastern Texas. Meanwhile, widespread showers and thunderstorms soaked much of the upper and middle Mississippi and Ohio Valleys and Great Lakes with moderate to heavy rain. A number of daily high temperature records were established over the lower Great Lakes and upper Ohio Valley in the warm air ahead of the system. By Saturday, this storm had moved eastward into the Atlantic Ocean after drenching much of the eastern third of the nation with rain. The Far West was also stormy, with a Pacific front bringing moderate to heavy rain to western Washington, western Oregon, and northern California.

According to the River Forecast Centers, the greatest weekly precipitation totals (over two inches) fell from Oklahoma to northern Michigan and southern Indiana and over the central and northern Appalachians, eastern Maine, the Florida Panhandle, and northern California. In addition, scattered totals exceeding two inches were reported across the lower Mississippi Valley, the mid–Atlantic, northern Texas, the central Rockies, the northern Pacific Coast, and southern Alaska. Light to moderate amounts dampened the remainders of the central and southern Plains, the Rockies, the Pacific Northwest, southern Alaska, and the eastern half of the country. Little or no precipitation fell in the northern Plains, the Great Basin, the desert Southwest, southern California, northern and central Alaska, and Hawaii. Persistently dry weather has afflicted the fiftieth state since early February.

Warmer than normal conditions prevailed across the immediate Pacific coast, the desert Southwest, the lower Great Lakes, the Northeast, the mid–Atlantic
portions of the Southeast. Weekly depar
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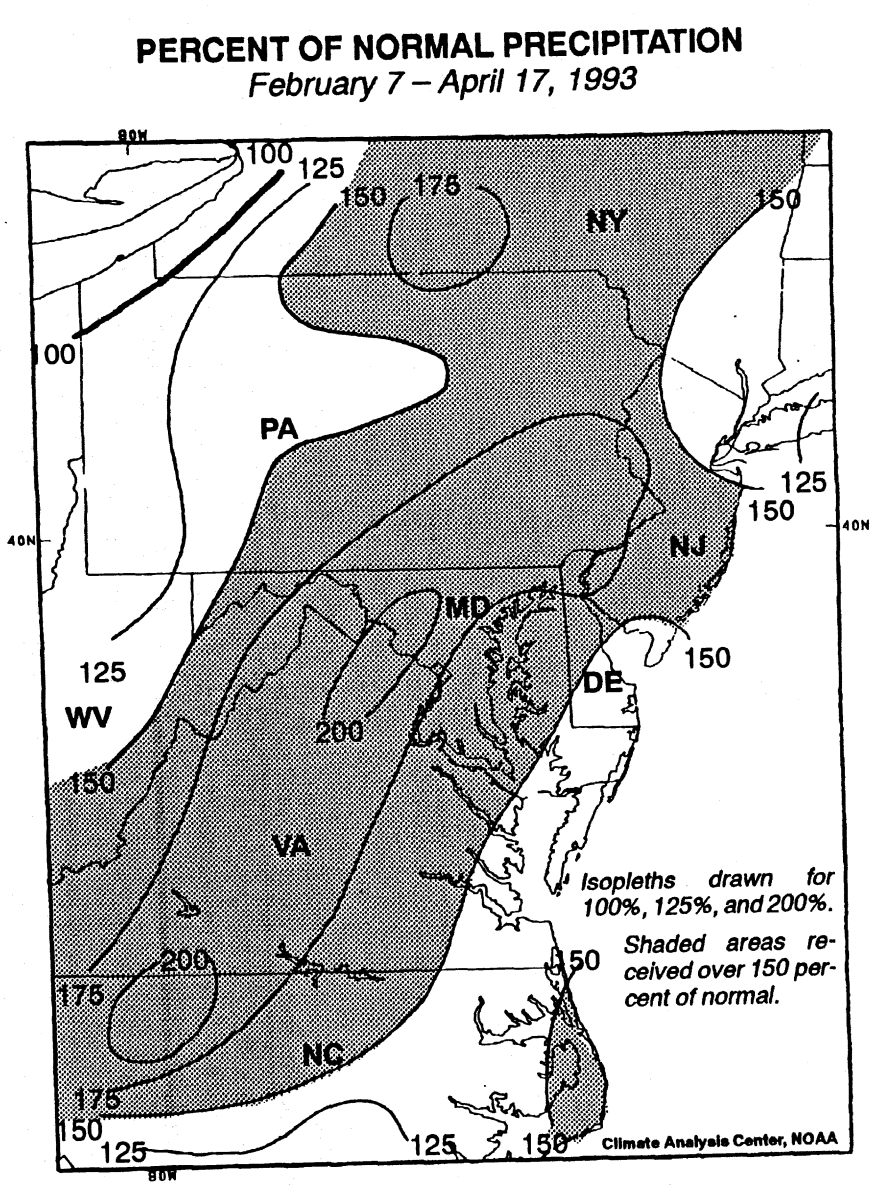
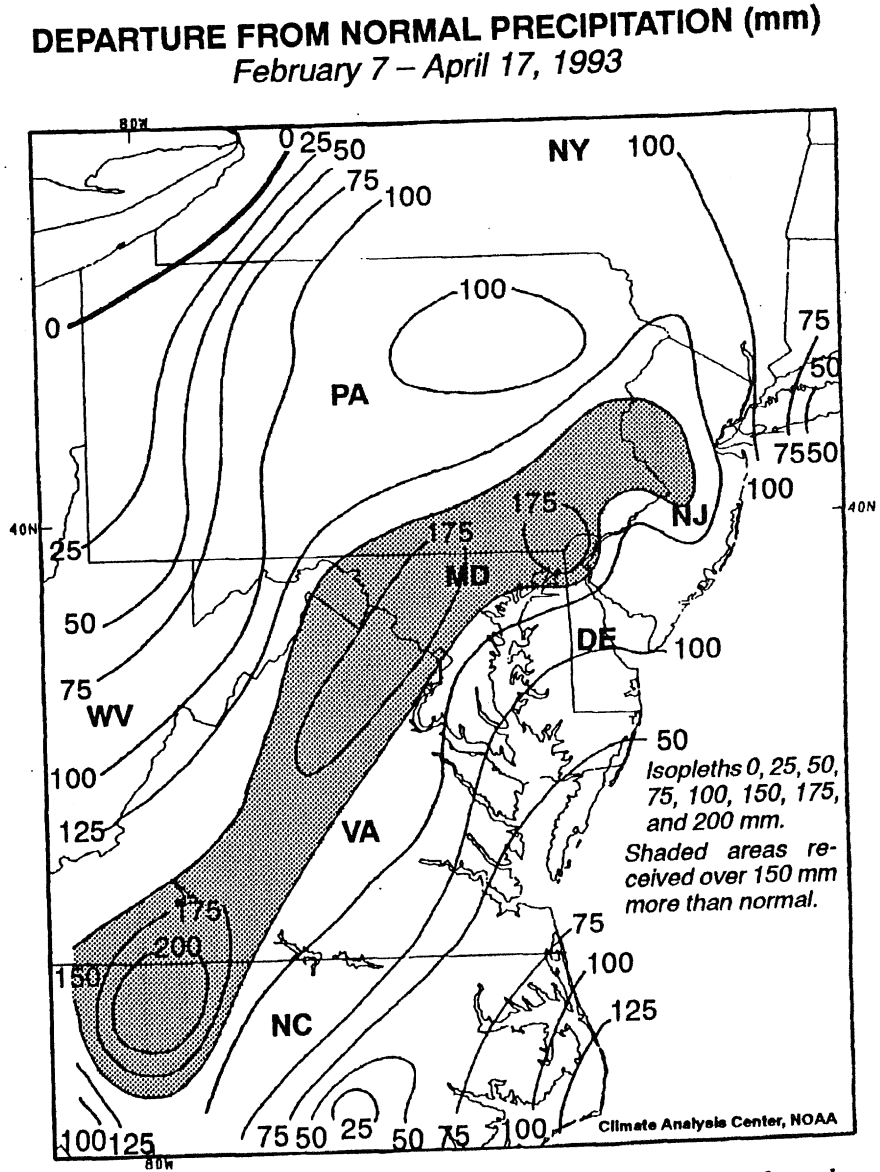
NORTH AMERICAN CLIMATE HIGHLIGHT FEATURE

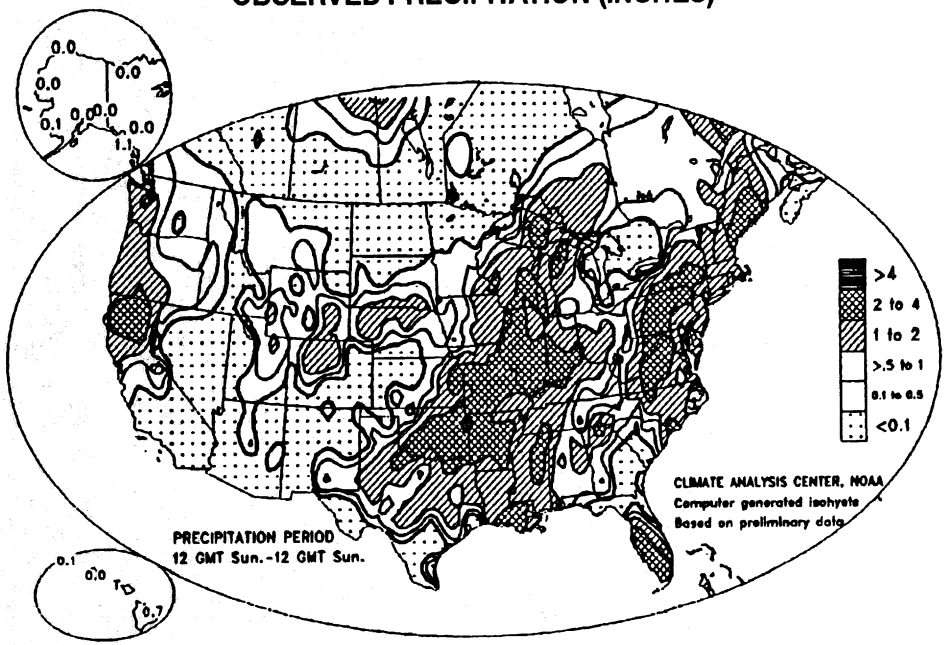




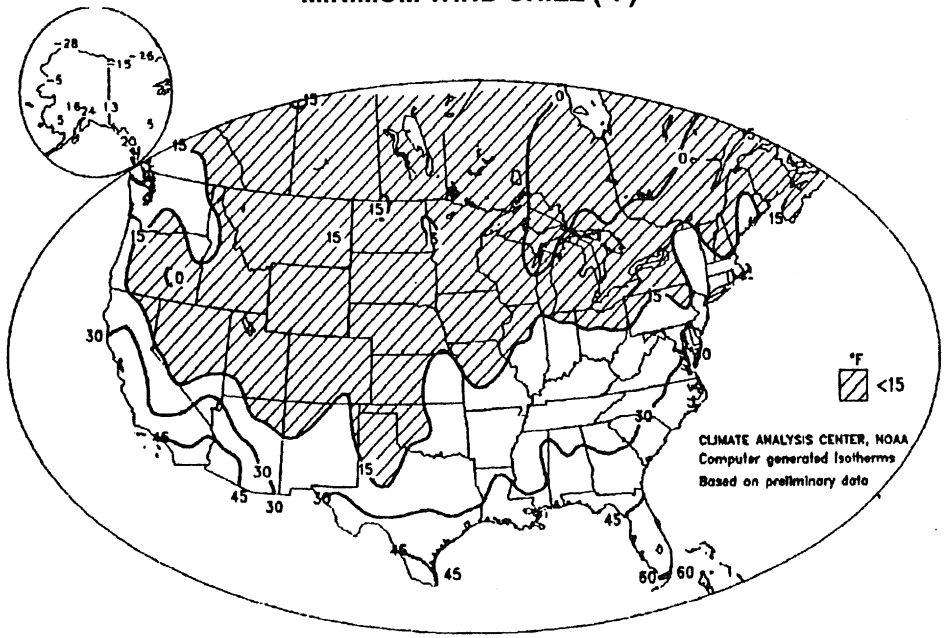
ABOVE NORMAL PRECIPITATION REPORTED THROUGHOUT THE MID–ATLANTIC SINCE EARLY FEBRUARY. *Most locations from the northern Appalachians southward into the Carolinas received at least 100 mm more than normal precipitation during February 7 – April 17, 1993, with portions of the northern North Carolina Piedmont measuring surpluses of over 200 mm. The mid–March "Storm of the Century" dropped up to 75 mm of precipitation on the region, adding to but not entirely accounting for the moisture excesses accumulated during the 70–day period. Long–term moisture conditions, as determined by the Palmer Drought Index, are primarily in the unusually moist (between 2.0 and 2.9) to extremely wet (over 4.0) categories.*

UNITED STATES WEEKLY CLIMATE CONDITIONS *(April 11 – 17, 1993)*

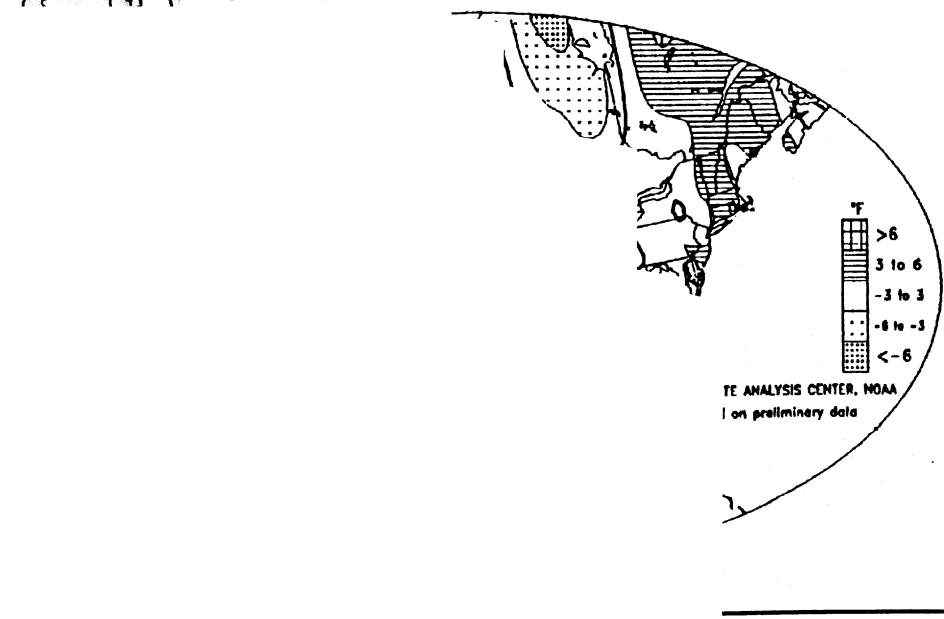
OBSERVED PRECIPITATION (INCHES)



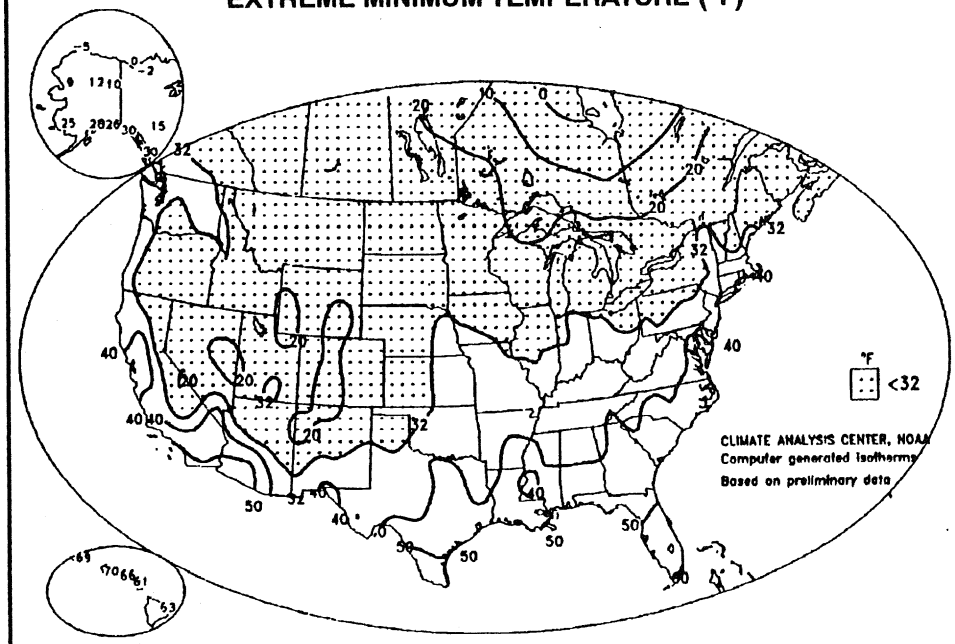
MINIMUM WIND CHILL (°F)



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

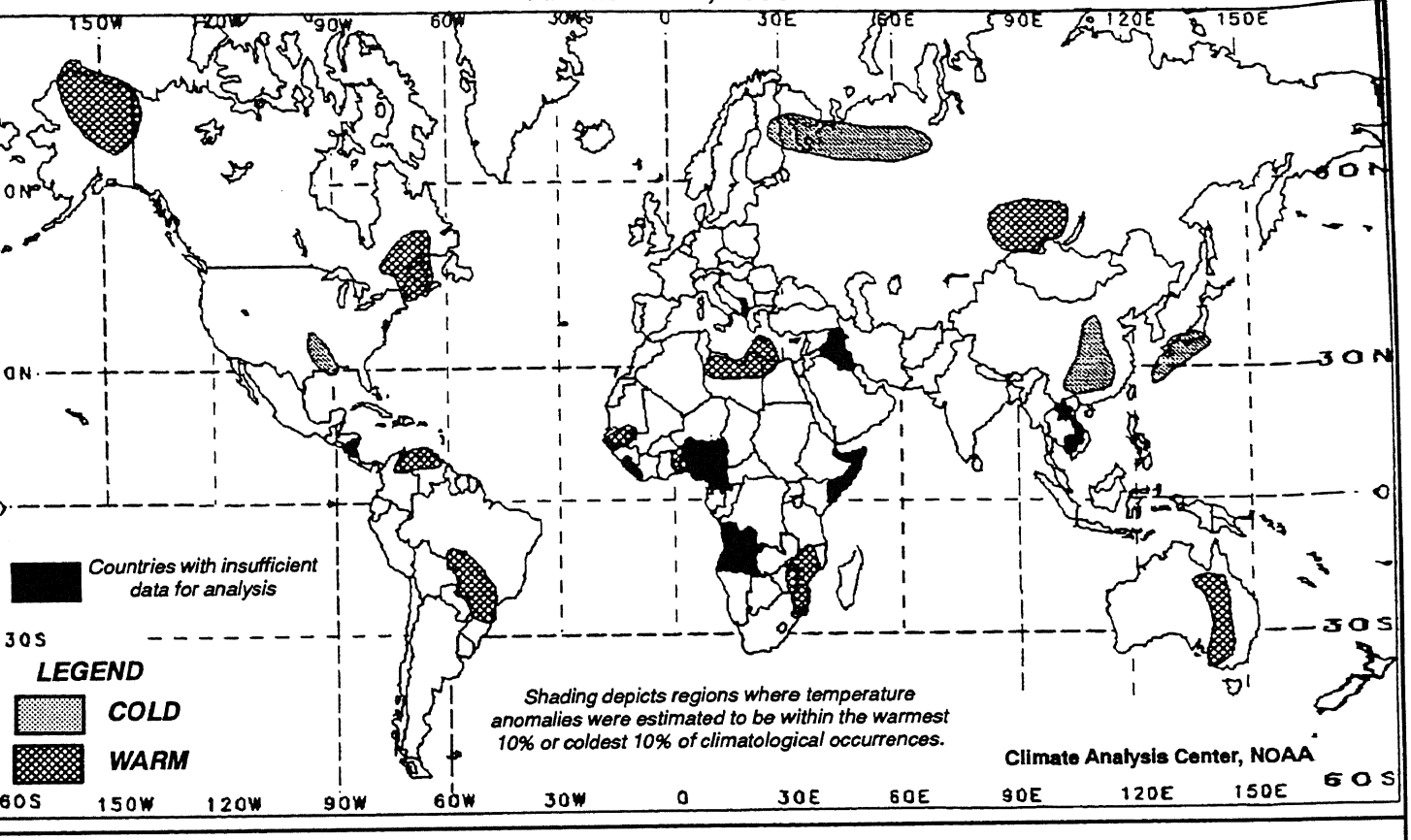


EXTREME MINIMUM TEMPERATURE (°F)



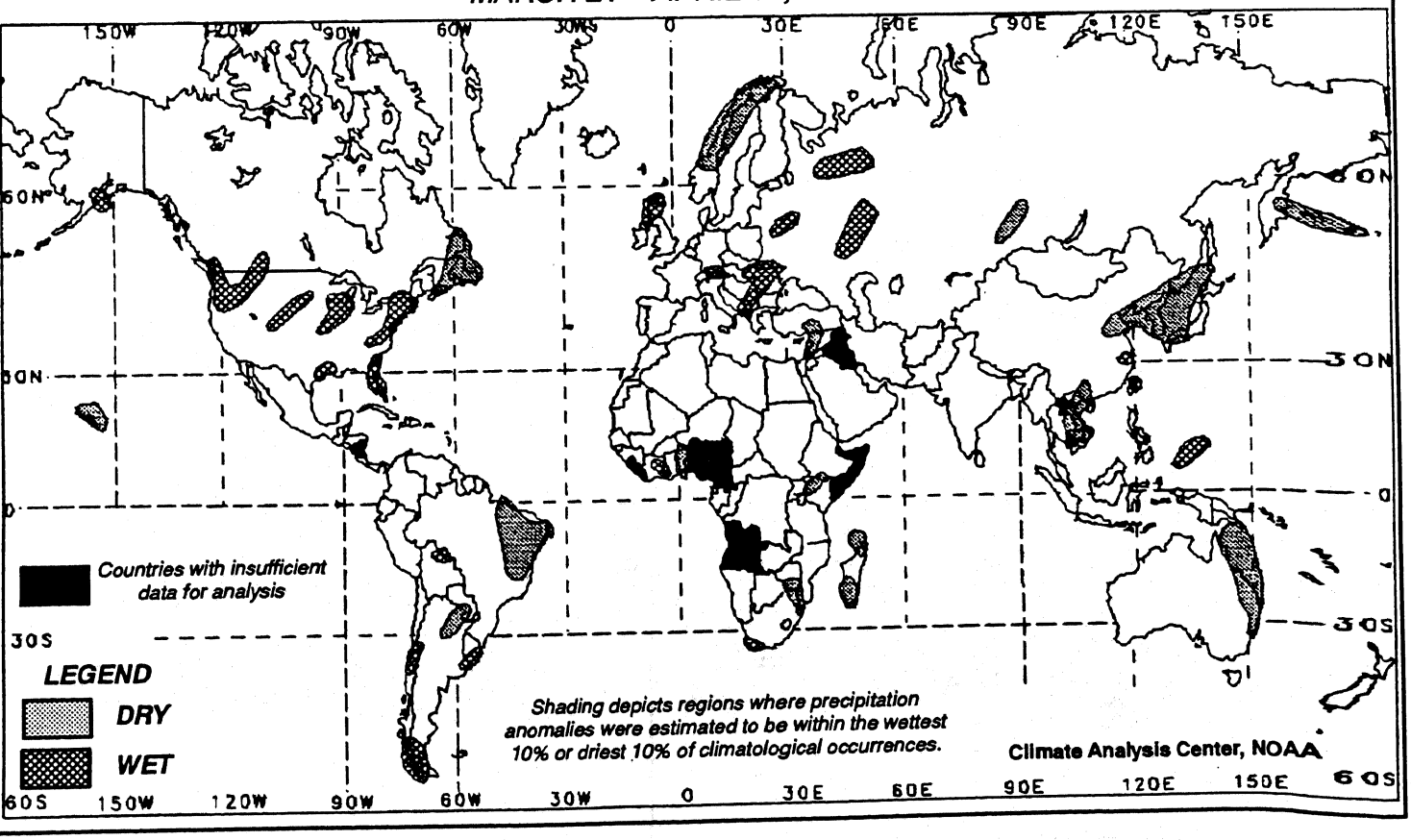
TWO–WEEK GLOBAL TEMPERATURE ANOMALIES

APRIL 4 – 17, 1993



FOUR–WEEK GLOBAL PRECIPITATION ANOMALIES

MARCH 21 – APRIL 17, 1993



EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 93/04

ISSUED BY

DIAGNOSTICS BRANCH
CLIMATE ANALYSIS CENTER, NMC

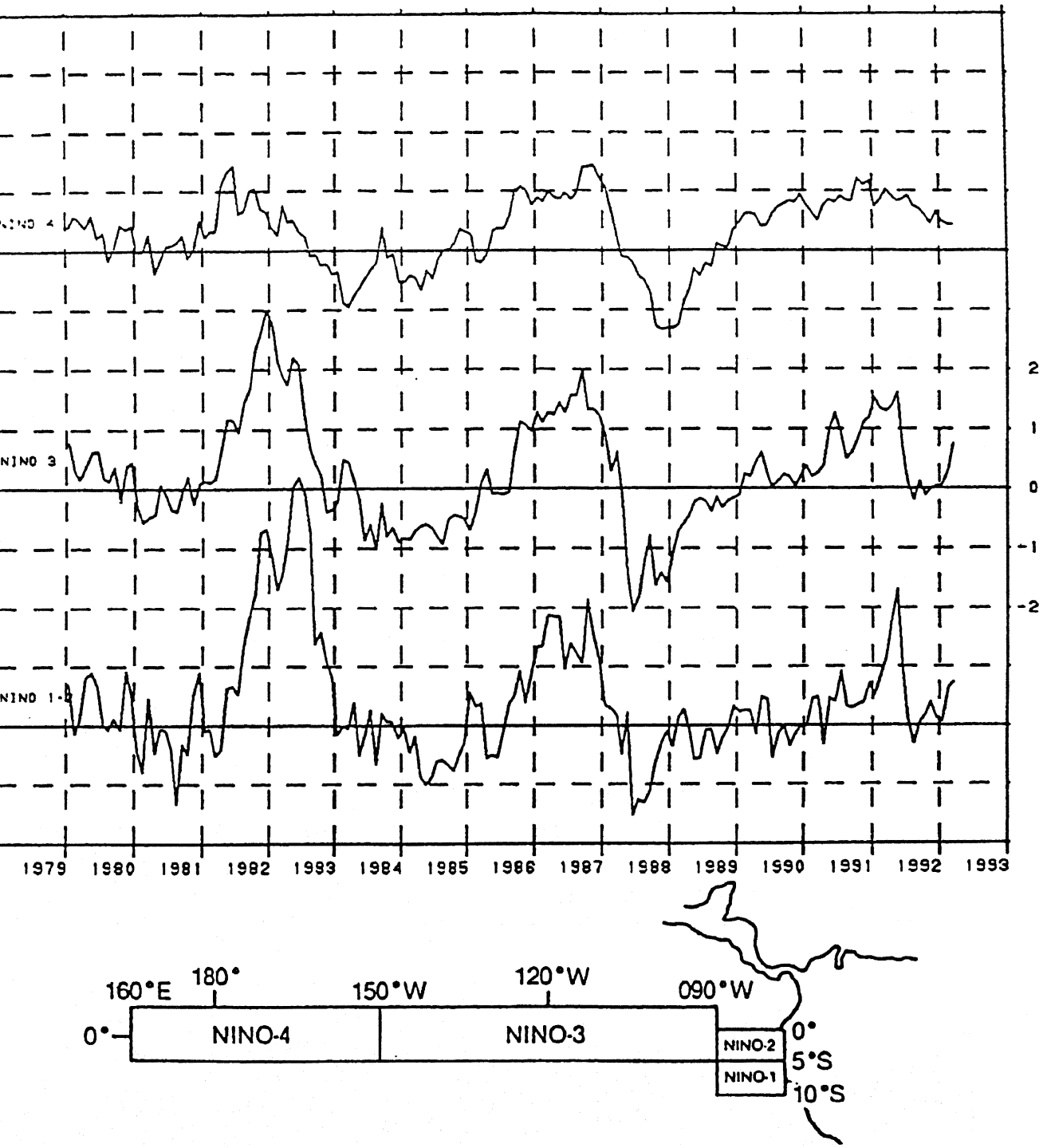
April 9, 1993

The patterns of anomalous atmospheric and oceanic circulation indicate a continuation of warm episode (ENSO) conditions in the tropical Pacific. During the past two months positive sea surface temperature (SST) anomalies have increased in the eastern equatorial Pacific, where El Niño conditions have developed. The greatest increase in March was in the Niño 3 region (90– 150°W) where the index increased to .8 (Fig. 1). Positive SST anomalies greater than +1°C were observed over a large portion of the tropical and subtropical eastern Pacific. By the end of March SST anomalies were greater than +2°C in the region just south of the equator from the South American coast westward to 115°W (Fig. 2), and near +4°C locally along the coast of Peru.

The oceanic thermocline depth was shallower (deeper) than normal in the western (eastern) equatorial Pacific during March, which is characteristic of the mature phase of warm episodes. However, the depths of the anomalies during March were weaker than those observed during February and much weaker than those observed during early 1992.

Some of the current atmospheric anomaly patterns have persisted since early 1990. These include weaker than normal low-level easterlies throughout the Pacific, negative sea level pressure anomalies in the eastern tropical Pacific, and positive sea level pressure anomalies over Indonesia and the tropical Atlantic (Fig. 3). These features are consistent with the long period of negative values of the SOI and with generally warmer than normal sea surface temperatures in the central and eastern equatorial Pacific. The only other period in the historical record with a similar prolonged period of negative values of the SOI was 1939–1942 (Fig. 4).

Experimental statistical and numerical model forecasts indicate near normal sea surface temperatures in the equatorial Pacific for the next three seasons. However, both the statistical and the numerical model forecasts are the least skillful at this time of year. Given the very large region of the eastern tropical Pacific with SST anomalies greater than 1°C (Fig. 2), it appears likely that warm episode conditions will continue at least for the next few months.



IGURE 1. Equatorial Pacific sea surface temperature anomaly indices (°C) for the areas indicated the figure. Niño 1+2 is the average over the Niño 1 and Niño 2 areas. Anomalies are computed with espect to the COADS/ICE climatology (Reynolds and Marsico 1993, *J. Climate,* 6, 114–119).

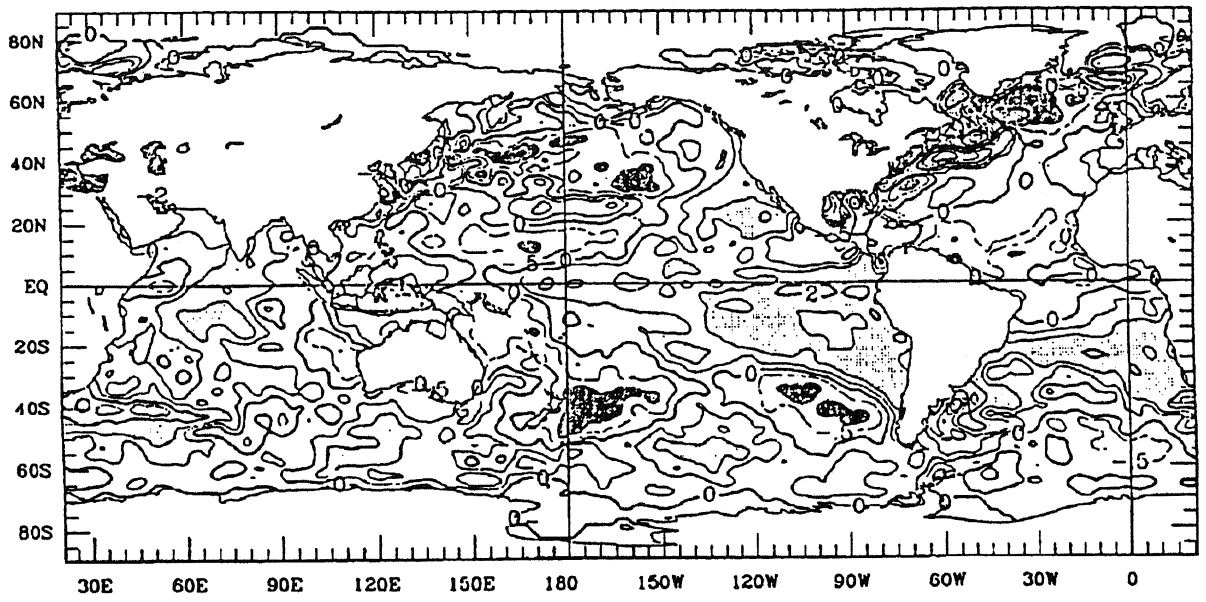


FIGURE 2. Sea surface temperature anomaly pattern for 28 March – 3 April 1993. The contour interval is 1°C and negative contours are dashed. Additional contours of ± 0.5°C are shown. Heavy contours are at 0°C and ± 2°C. Light (dark) shading indicates anomalies greater (less) than 1°C (–1°C). Anomalies are computed as departures from the COAD/ICE climatology (Reynolds and Marsico 1993, *J. Climate*, 6, 114–119.)

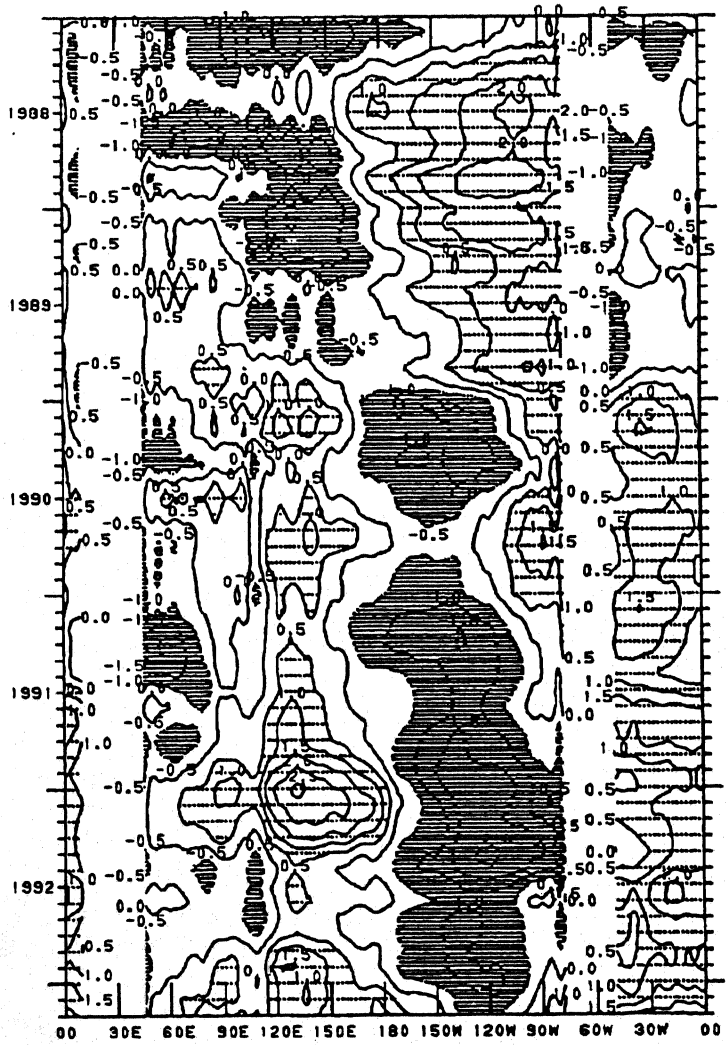


FIGURE 3. Time-l
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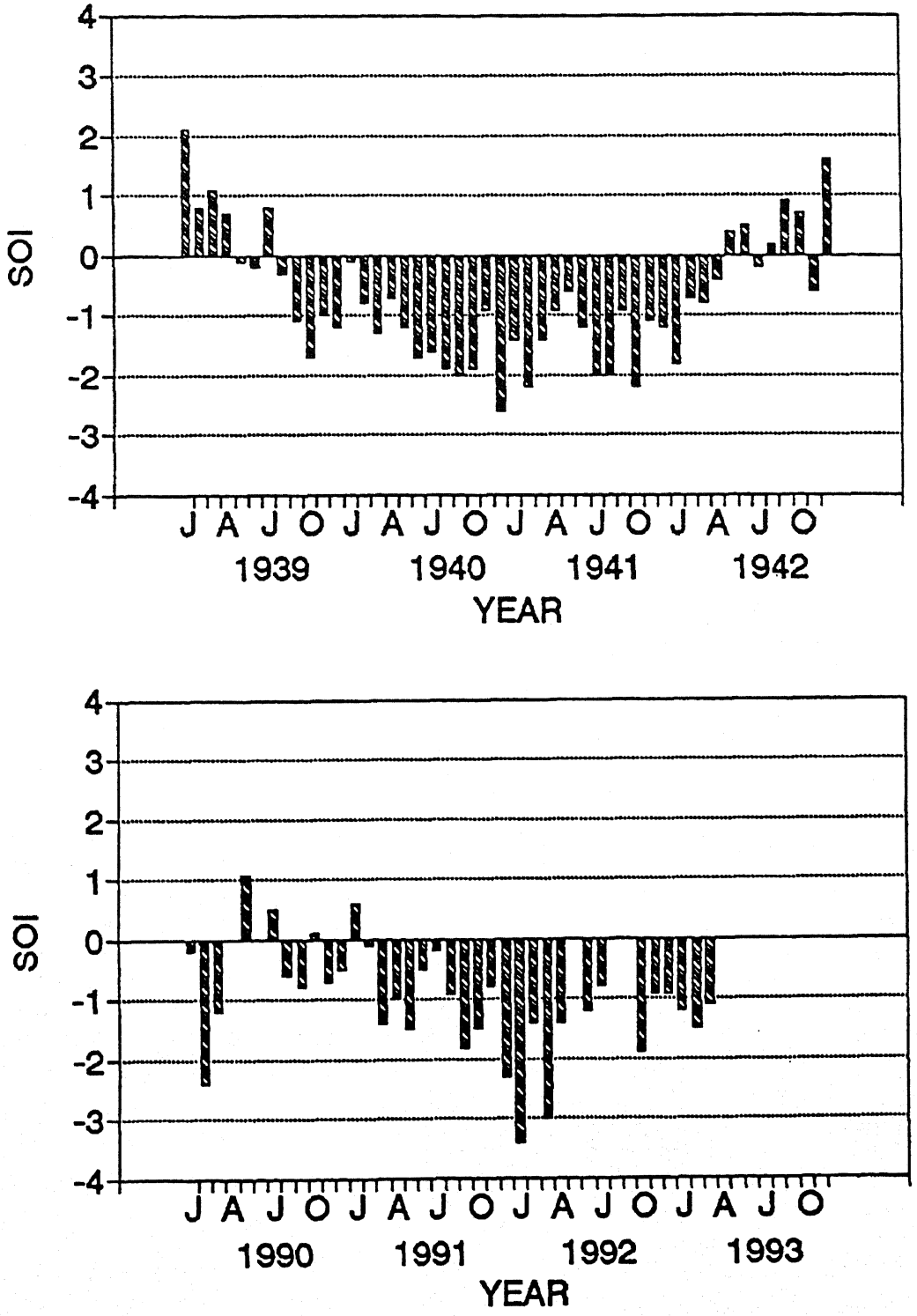
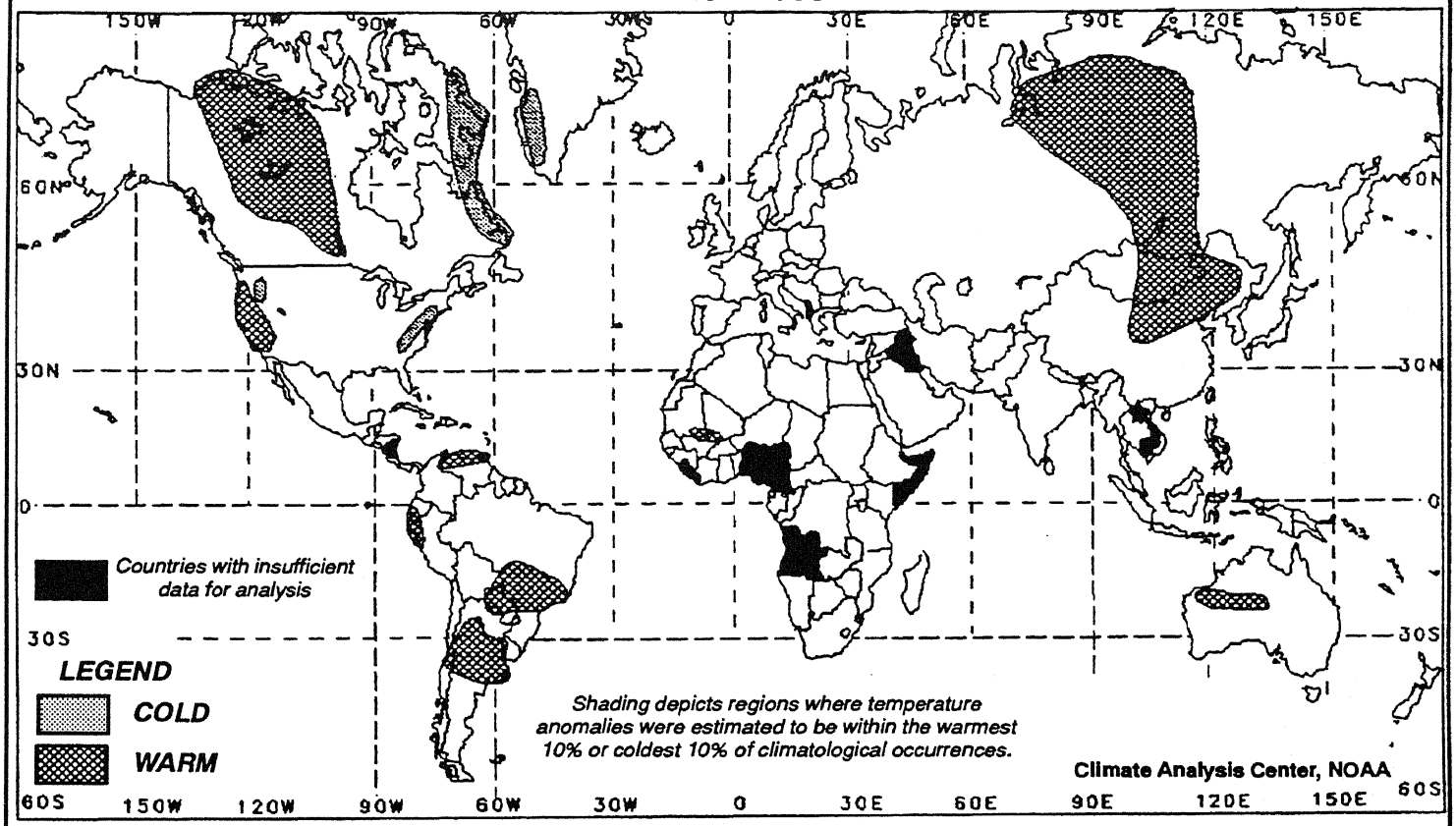

SOUTHERN OSCILLATION INDEX
SOI
4
3
2
1
0
-1
-2
-3
-4
J A J O J A J O J A J O J A J O
1939
1940
1941
1942
YEAR
SOI
4
3
2
1
0
-1
-2
-3
-4
J A J O J A J O J A J O J A J O
1990
1991
1992
1993
YEAR

FIGURE 4.

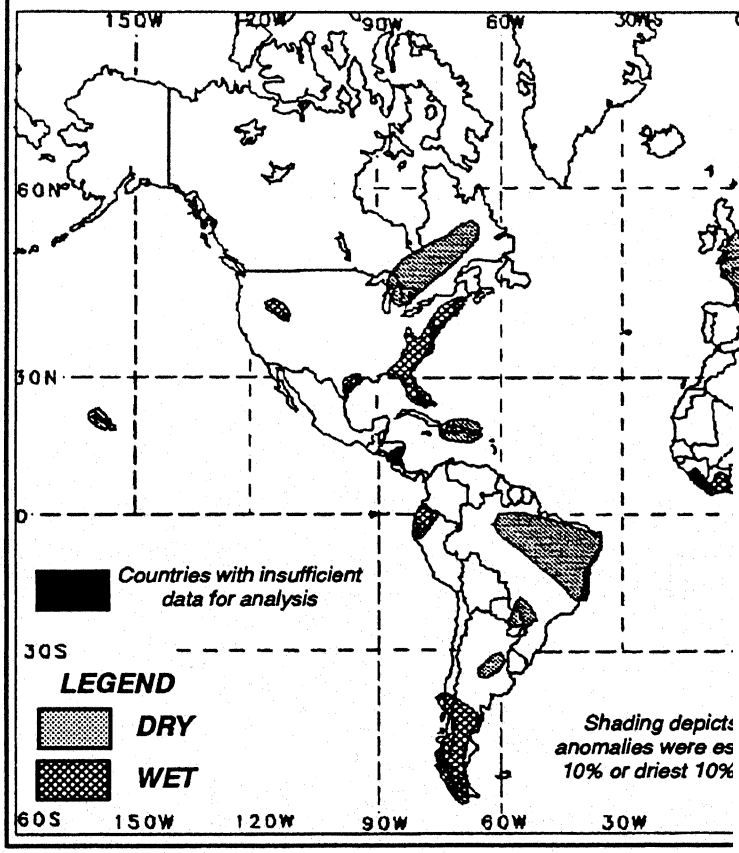
MONTHLY GLOBAL TEMPERATURE ANOMALIES

MARCH 1993



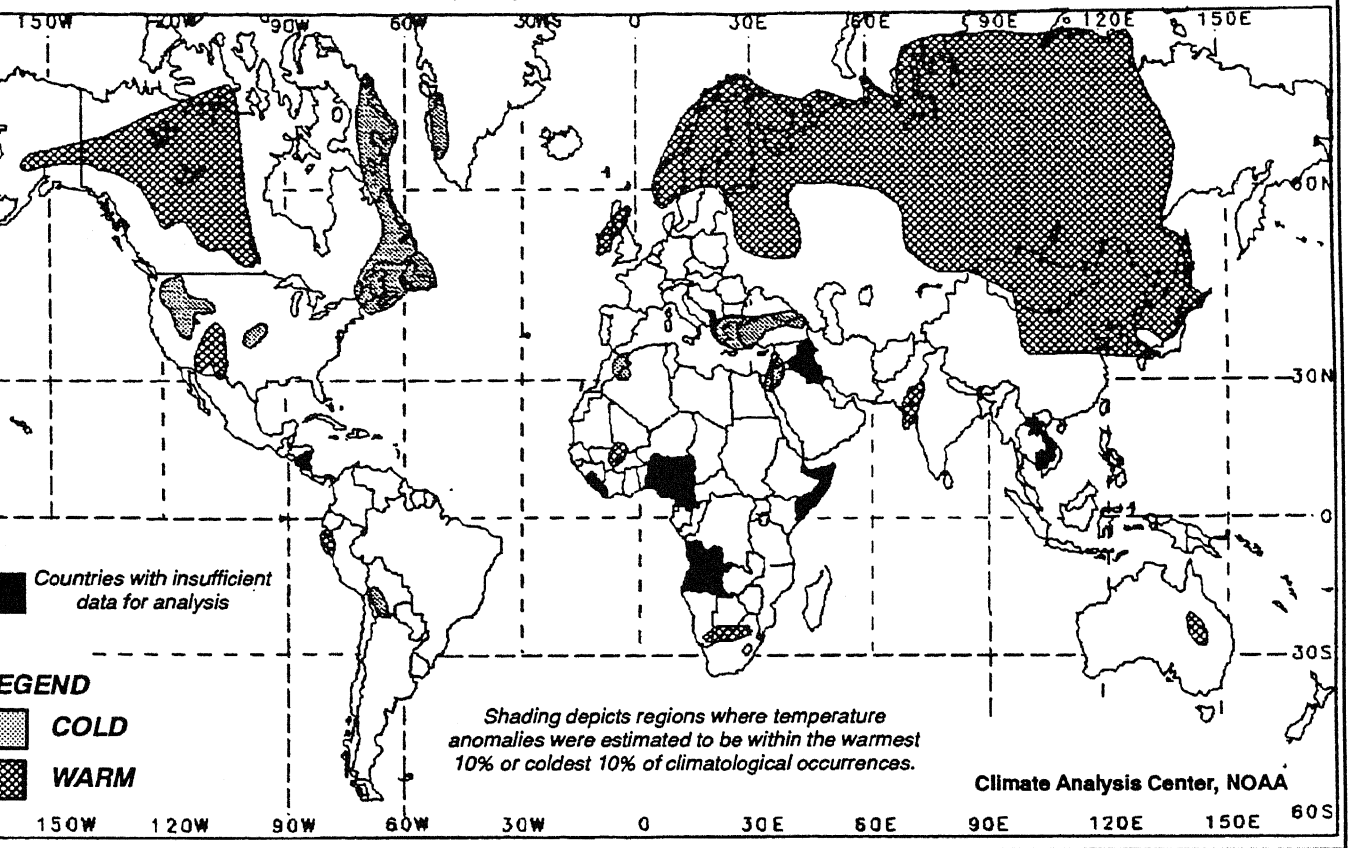
MONTHLY GLOBAL PRECIPITATION ANOMALIES

MARCH 1993



THREE–MONTH GLOBAL TEMPERATURE ANOMALIES

JANUARY – MARCH 1993



THREE–MONTH GLOBAL PRECIPITATION ANOMALIES

JANUARY – MARCH 1993